

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-12 (Cancelled)

[1. A flywheel for a power transmission system for transmitting engine torque to a driven unit, comprising:

an elastic plate secured to a crankshaft to rotate therewith;

a flywheel body secured to said elastic plate and having an engageable surface for engaging with a clutch disc; and

a reinforcing member for reinforcing said elastic plate at a portion of said elastic plate which is secured to said crankshaft;

said elastic plate having an axial rigidity in the range of 600 kg/mm to 2200 kg/mm so as to ensure transmission of engine torque to said driven unit, while decreasing noise produced by a bending vibration of said crankshaft;

wherein each of said elastic plate, said flywheel body and said reinforcing member comprises a first portion, said first portion of said flywheel body being placed axially between said first portions of said elastic plate and said reinforcing member, and said first portions of said elastic plate, said flywheel body and said reinforcing member defining clearances for allowing said first portion of said flywheel body to move axially between said first portions of said elastic plate and said reinforcing member.

2. A flywheel as set forth in claim 1, wherein said axial rigidity is in the range of 600 kg/mm to 1700 kg/mm.

3. A flywheel as set forth in claim 2, wherein an axial run-out of said engageable surface when rotated by said crankshaft is no more than 0.1 mm.

4. A flywheel according to claim 1, wherein said reinforcing member (4) and said elastic plate (2) are fastened to said crankshaft (1) by a fastening means (3), and said elastic plate is clamped between said crankshaft and said reinforcing member.

5. A flywheel according to claim 4, wherein said elastic plate is circular and comprises an outer peripheral portion (2b) surrounding said first portion of said elastic plate, so that said first portion of said elastic plate is an inner portion of said elastic plate, said flywheel body comprises an outer peripheral portion (5a) which surrounds said first portion of said flywheel body, so that said first portion of said flywheel body is an inner portion of said flywheel body, said outer peripheral portions of said elastic plate and said flywheel body are fastened together by a second fastening means (6), said inner portion of said flywheel body comprises an inwardly facing inside cylindrical surface defining a central circular hole (5b), said reinforcing member comprises a cylindrical portion (4a) which is received in said circular hole (5b) of said flywheel body, and comprises an outwardly facing outside cylindrical surface surrounded by said inwardly facing cylindrical surface of said flywheel body, said first portion of said reinforcing member is in the form of an outward flange (4b), said first portion of said flywheel body is slidably mounted on said cylindrical portion of said reinforcing member so that said first portion of said flywheel body is axially slidable between said inner portion of said elastic plate and said outward flange of said reinforcing member.

6. A flywheel according to claim 4, wherein said inner portion of said flywheel body comprises a first surface (5f) which is substantially parallel to said engageable surface (5g) and which faces toward said elastic plate, and a second surface (5d) which is substantially parallel to said engageable surface and which faces toward said outward flange of said reinforcing member, said inner portion of said elastic plate comprising an abutting surface confronting said first surface of said flywheel body and limiting an axial movement of said inner portion of said elastic plate by abutting against said first surface of said flywheel body, said outward flange of said reinforcing member comprises an abutting surface confronting said second surface of said flywheel body and limiting the axial movement of said inner portion of said flywheel body by abutting against said second surface of said flywheel body, an axial distance between said first and second surfaces of said flywheel body is smaller than an axial distance between said abutting surfaces of said elastic member and said reinforcing member.

7. A flywheel according to claim 6, wherein said second surface (5d) of said inner portion of said flywheel body is located axially between said first surface (5f) and said engageable surface (5g) of said flywheel body.

8. A flywheel for a power transmission system for transmitting engine torque to a driven unit, comprising:

an elastic plate secured to a crankshaft to rotate therewith;

a flywheel body secured to said elastic plate and having an engageable surface for engaging with a clutch disc; and

a reinforcing member for reinforcing said elastic plate at a portion of said elastic plate which is secured to said crankshaft; and

said engageable surface having an axial run-out which is equal to or less than 0.1 mm;

wherein each of said elastic plate, said flywheel body and said reinforcing member comprises a first portion, said first portion of said flywheel body being placed axially between said first portions of said elastic plate and said reinforcing member, and said first portions of said elastic plate, said flywheel body and said reinforcing member defining clearances for allowing said first portion of said flywheel body to move axially between said first portions of said elastic plate and said reinforcing member.

9. A flywheel assembly comprising:

a driving shaft (1) for transmitting torque;

a circular elastic member (2) comprising an outer portion and an inner portion and extending radially inwardly from said outer portion to said inner portion, said inner portion of said elastic member being fastened to a shaft end of said driving shaft;

an annular flywheel member (5) comprising an outer portion and an inner portion and extending radially inwardly from said outer portion to said inner portion of said flywheel member, said outer portion of said flywheel member being fastened to said outer portion of said elastic member, said inner portion of said flywheel member comprising a central circular hole; and

a reinforcing member (4) comprising a cylindrical portion (4a) axially extending from a first end to a second end, an inner portion extending radially inwardly from said first end of said cylindrical portion, and an outward flange (4b) extending radially outwardly from said second end of said cylindrical portion, said inner portion of said reinforcing member being fastened to said shaft end of said driving shaft, said cylindrical portion of said reinforcing member being fit in said circular hole of said flywheel member with a clearance to form a loose fit;

wherein said inner portion of said elastic member is fixedly clamped between said shaft end of said driving shaft and said inner portion of said reinforcing member, said inner portion of said flywheel member is loosely fit over said cylindrical portion of said reinforcing member and located axially between said inner portion of said elastic member and said outward flange of said reinforcing member, said outward flange is axially spaced from said inner portion of said elastic member at an axial distance which allows axial movement of said inner portion of said flywheel body between said inner portion of said elastic member and said outward flange of said reinforcing member.

10. A flywheel assembly according to claim 3, wherein said elastic member has an axial rigidity which is in the range of 600 kg/mm to 2200 kg/mm.

11. A flywheel assembly according to claim 9, wherein a wall thickness of said inner portion of said reinforcing member is greater than a wall thickness of each of said outward flanges of said reinforcing member and said inner portion of said elastic member, said wall thickness of each of said inner portion and said outward flange of said reinforcing

member and said inner portion of said elastic member being a dimension measured in an axial direction parallel to an axis of said driving shaft.

12. A flywheel assembly according to claim 9, further comprising a first fastening means for fastening said outer portions of said elastic member and said flywheel member together, and a second fastening means for fastening said inner portions of said elastic member and said reinforcing member to said shaft end of said driving shaft, each of said first and second fastening means comprises screw fasteners extending axially along an axis of said driving shaft.]

13-100 (Cancelled)

101. A flywheel assembly for a power transmission system for transmitting engine torque, comprising:

an elastic plate secured to a crankshaft to rotate therewith;

a flywheel body secured to said elastic plate and having an engaging surface for engaging with a clutch disc; and

a reinforcing member for reinforcing said elastic plate at a portion of said elastic plate which is secured to said crankshaft;

said elastic plate having an axial rigidity in the range of 600 kg/mm to 2200 kg/mm so as to ensure transmission of engine torque through said flywheel assembly while decreasing noise produced by a bending vibration of said crankshaft;

wherein each of said elastic plate, said flywheel body and said reinforcing member comprises a first portion, said first portion of said flywheel body being

placed axially between said first portions of said elastic plate and said reinforcing member, and said first portions of said elastic plate, said flywheel body and said reinforcing member defining clearances for allowing said first portion of said flywheel body to move axially between said first portions of said elastic plate and said reinforcing member.

102. A flywheel assembly as set forth in claim 101, wherein said axial rigidity is in the range of 600 kg/mm to 1700 kg/mm.

103. A flywheel assembly as set forth in claim 102, wherein an axial run-out of said engaging surface when rotated by said crankshaft is no more than 0.1 mm.

104. A flywheel assembly according to claim 101, wherein said reinforcing member (4) and said elastic plate (2) are fastened to said crankshaft (1) by a fastening means (3), and said elastic plate is clamped between said crankshaft and said reinforcing member.

105. A flywheel assembly according to claim 104, wherein said elastic plate is circular and comprises an outer peripheral portion (2b) surrounding said first portion of said elastic plate, so that said first portion of said elastic plate is an inner portion of said elastic plate, said flywheel body comprises an outer peripheral portion (5a) which surrounds said first portion of said flywheel body, so that said first portion of said flywheel body is an inner portion of said flywheel body, said outer peripheral portions of said elastic plate and said flywheel body are fastened together by a second fastening means (6), said inner portion of said flywheel body comprises an inwardly facing inside cylindrical surface defining a

central circular hole (5b), said reinforcing member comprises a cylindrical portion (4a) which is received in said circular hole (5b) of said flywheel body, and comprises an outwardly facing outside cylindrical surface surrounded by said inwardly facing cylindrical surface of said flywheel body, said first portion of said reinforcing member is in the form of an outward flange (4b), said first portion of said flywheel body is mounted on said cylindrical portion of said reinforcing member, and said cylindrical portion of said reinforcing member is sized to allow said first portion of said flywheel body to slide axially between said inner portion of said elastic plate and said outward flange of said reinforcing member.

106. A flywheel assembly according to claim 104, wherein said inner portion of said flywheel body comprises a first surface (5f) which is substantially parallel to said engaging surface (5g) and which faces toward said elastic plate, and a second surface (5d) which is substantially parallel to said engaging surface and which faces toward said outward flange of said reinforcing member, said inner portion of said elastic plate comprising an abutting surface confronting said first surface of said flywheel body and limiting an axial movement of said inner portion of said flywheel body by abutting against said first surface of said flywheel body, said outward flange of said reinforcing member comprises an abutting surface confronting said second surface of said flywheel body and limiting the axial movement of said inner portion of said flywheel body by abutting against said second surface of said flywheel body, an axial distance between said first and second surfaces of said flywheel body is smaller than an axial distance between said abutting surfaces of said elastic member and said reinforcing member.

107. A flywheel assembly according to claim 106, wherein said second surface (5d) of said inner portion of said flywheel body is located axially between said first surface (5f) and said engaging surface (5g) of said flywheel body.

108. A flywheel assembly for a power transmission system for transmitting engine torque, comprising:

an elastic plate secured to a crankshaft to rotate therewith;

a flywheel body secured to said elastic plate and having an engaging surface for engaging with a clutch disc; and

a reinforcing member for reinforcing said elastic plate at a portion of said elastic plate which is secured to said crankshaft; and

said engaging surface having an axial run-out which is equal to or less than 0.1 mm;

wherein each of said elastic plate, said flywheel body and said reinforcing member comprises a first portion, said first portion of said flywheel body being placed axially between said first portions of said elastic plate and said reinforcing member, and said first portions of said elastic plate, said flywheel body and said reinforcing member defining clearances for allowing said first portion of said flywheel body to move axially between said first portions of said elastic plate and said reinforcing member.

109. A flywheel assembly comprising:

a crankshaft (1) for transmitting torque;

a circular elastic plate (2) comprising an outer portion and an inner portion and extending radially inwardly from said outer portion to said inner portion, said inner portion of said elastic plate being fastened to a shaft end of said crankshaft;

an annular flywheel body (5) comprising an outer portion and an inner portion and extending radially inwardly from said outer portion to said inner portion of said flywheel body, said outer portion of said flywheel body being fastened to said outer portion of said elastic plate, said inner portion of said flywheel body comprising a central circular hole;
and

a reinforcing member (4) comprising a cylindrical portion (4a) axially extending from a first member end to a second member end, an inner portion extending radially inwardly from said first member end of said cylindrical portion, and an outward flange (4b) extending radially outwardly from said second member end of said cylindrical portion, said inner portion of said reinforcing member being fastened to said shaft end of said crankshaft, said cylindrical portion of said reinforcing member being fit in said circular hole of said flywheel body with a clearance to form a loose fit;

wherein said inner portion of said elastic plate is fixedly clamped between said shaft end of said crankshaft and said inner portion of said reinforcing member, said inner portion of said flywheel body is fit over said cylindrical portion of said reinforcing member and located axially between said inner portion of said elastic plate and said outward flange of said reinforcing member, said outward flange is axially spaced from said inner portion of said elastic plate at an axial distance which allows axial movement of said inner portion of said flywheel body between said inner portion of said elastic plate and said outward flange of said reinforcing member.

110. A flywheel assembly according to claim 109, wherein said elastic plate has an axial rigidity which is in the range of 600 kg/mm to 2200 kg/mm.

111. A flywheel assembly according to claim 109, wherein a wall thickness of said inner portion of said reinforcing member is greater than a wall thickness of each of said outward flange of said reinforcing member and said inner portion of said elastic plate said wall thickness of each of said inner portion and said outward flange of said reinforcing member and said inner portion of said elastic plate being a dimension measured in an axial direction parallel to an axis of said crankshaft.

112. A flywheel assembly according to claim 109, further comprising a first fastening means for fastening said outer portions of said elastic plate and said flywheel body together, and a second fastening means for fastening said inner portions of said elastic plate and said reinforcing member to said shaft end of said crankshaft, each of said first and second fastening means comprises screw fasteners extending axially along an axis of said crankshaft.

113. A flywheel assembly for a power transmission system for transmitting engine torque comprising:

a crankshaft;

an elastic plate comprising an inner portion secured to a shaft end of said crankshaft;

a flywheel body secured to said elastic plate and having an engaging surface for engaging with the clutch disc; and

a reinforcing member for reinforcing said elastic plate at said inner portion of said elastic plate;

wherein said elastic plate has an axial rigidity in the range of 600 kg/mm to 2200 kg/mm so as to ensure transmission of engine torque through said flywheel assembly, while decreasing noise produced by a bending vibration of said crankshaft;

wherein said elastic plate is clamped axially between said reinforcing member and said shaft end of said crankshaft, and

wherein a first portion of said flywheel moves axially with respect to said reinforcing member and said elastic plate,

wherein said reinforcing member has a radially extending portion which extends at least inwardly of said flywheel body, and wherein said elastic plate comprises a first portion, said first portion of said flywheel body being placed axially after said first portion of said elastic plate, and said first portions of said flywheel body and said elastic plate defining a first clearance and said flywheel body having a first free space on a side opposite of the first clearance for allowing said first portion of said flywheel body to move axially within the first clearance and the free space.

114. A flywheel assembly as set forth in Claim 113, wherein said flywheel body comprises an inner portion defining a circular central hole, and an outer portion surrounding said inner portion of said flywheel body; said elastic plate comprises an outer portion which surrounds said inner portion of said elastic plate and which is fixed to said outer portion of said flywheel body; said reinforcing member is fit in said central hole of said flywheel body with a clearance to form a loose fit; and said reinforcing member comprises an

outer circumferential surface for allowing said inner portion of said flywheel body to move axially to said elastic plate without limiting an axial movement of the inner portion of said flywheel body toward said elastic plate.

115. A flywheel assembly as set forth in Claim 114, wherein said reinforcing member extends axially from a first member end defined by a radially extending abutment surface held in contact with said elastic plate, to a second member end; said outer circumferential surface of said reinforcing member extends from said abutment surface toward said second member end of said reinforcing member; said outer circumferential surface of said reinforcing member comprises an outer cylindrical surface section fit in said central hole of said flywheel body, and an outer curved surface section which extends continuously from said outer cylindrical surface section to said abutment surface; and said curved surface section is a surface of revolution whose diameter decreases continuously from a diameter of said cylindrical surface section toward said abutment surface.

116. A flywheel assembly as set forth in Claim 115, wherein said flywheel body comprises a side surface facing toward said elastic plate, and said engaging surface which faces away from said elastic plate and which extends in an imaginary flat plane; and said second member end of said reinforcing member is located axially between said engaging surface and said side surface of said flywheel body and away from said imaginary flat plane.

117. A flywheel assembly as set forth in Claim 113, wherein said flywheel body comprises an inner portion defining a circular central hole, and an outer portion

surrounding said inner portion of said flywheel body; said elastic plate comprises an outer portion which surrounds said inner portion of said elastic plate and which is fixed to said outer portion of said flywheel body; and said reinforcing member comprises an outer circumferential surface allowing said inner portion of said flywheel body to move axially toward said elastic plate without limiting an axial movement of the inner portion of said flywheel body toward said elastic plate.

118. A flywheel assembly as set forth in Claim 113, wherein said flywheel body comprises a side surface facing toward said elastic plate, and said engaging surface which faces away from said elastic plate; and said reinforcing member comprises a radially extending abutment surface held in contact with said elastic plate, and an outer circumferential curved surface which extends continuously from said abutment surface to a curved surface end which is located axially between said side surface of said flywheel body and said engaging surface of said flywheel body.

119. A flywheel assembly as set forth in Claim 118, wherein said outer circumferential curved surface of said reinforcing member is a surface of revolution whose diameter increases continuously from said abutment surface of said reinforcing member to said curved surface end of said outer circumferential curved surface.

120. A flywheel assembly as set forth in Claim 118, wherein said reinforcing member extends axially from a first member end defined by said abutment surface to a second member end which is located axially between said engaging surface and said side

surface of said flywheel body; and an axial distance of said second member end of said reinforcing member from said abutment surface of said reinforcing member is smaller than an axial distance of said engaging surface of said flywheel body from said abutment surface of said reinforcing member.

121. A flywheel assembly as set forth in Claim 118, wherein said engaging surface of said flywheel body extends in an imaginary flat plane; and said reinforcing member extends axially from a first member end defined by said abutment surface to a second member end which is located axially between said engaging surface and said side surface of said flywheel body and which is away from said imaginary flat plane.

122. A flywheel assembly as set forth in Claim 118, wherein said flywheel body comprises an inner portion defining a circular central hole, and an outer portion surrounding said inner portion of said flywheel body; said elastic plate comprises an outer portion which surrounds said inner portion of said elastic plate and which is fixed to said outer portion of said flywheel body; said reinforcing member comprises a received portion which is received in said central hole of said flywheel body; and said outer curved surface of said reinforcing member extends continuously from said abutment surface to said received portion.

123. A flywheel assembly as set forth in Claim 122, wherein said received portion of said reinforcing member comprises a cylindrical outside surface received in said central hole of said flywheel body, and the diameter of said curved surface increases

continuously from said abutment surface to a diameter of said cylindrical surface of said reinforcing member.

124. A flywheel assembly as set forth in Claim 121, wherein said axial rigidity is in the range of 600 kg/mm to 1700 kg/mm.

125. A flywheel assembly as set forth in Claim 121, wherein an axial run-out of said engaging surface when rotated by said crankshaft is no more than 0.1 mm.

126. A flywheel assembly as set forth in Claim 125, wherein said engaging surface of said flywheel body is formed so as to make the axial run-out no more than 0.1 mm by processing said engaging surface of said flywheel body in an assembled state in which said crankshaft, said elastic plate, said flywheel body and said reinforcing member are assembled in a unit.

127. A flywheel assembly as set forth in Claim 121, wherein said side surface of said flywheel body comprises an outer side surface section which faces toward said elastic plate and which is fastened to an outer portion of said elastic plate and an inner side surface section which faces toward said elastic plate, which is surrounded by said outer side surface section of said flywheel body, and which is raised from said outer side surface section axially toward said elastic plate.

128. A flywheel assembly flywheel assembly of a power transmission system for transmitting engine torque, said flywheel assembly comprising:

a crankshaft;

an elastic plate comprising an inner portion secured to a shaft end of said crankshaft;

a flywheel body secured to said elastic plate and having an engaging surface for engaging with the clutch disc; and

a reinforcing member for reinforcing said elastic plate at said inner portion of said elastic plate;

wherein said engaging surface has an axial run-out which is no more than 0.1 mm;

wherein said elastic plate is clamped axially between said reinforcing member and said shaft end of said crankshaft, and

wherein a first portion of said flywheel moves axially with respect to said reinforcing member and said elastic plate,

wherein said reinforcing member has a radially extending portion which extends at least inwardly of said flywheel body, and wherein said elastic plate comprises a first portion, said first portion of said flywheel body being placed axially after said first portion of said elastic plate, and said first portions of said flywheel body and said elastic plate defining a first clearance, and said flywheel body having a first free space on a side opposite of the flywheel facing the elastic plate for allowing said first portion of said flywheel body to move axially within the first clearance and the free space.

129. A flywheel assembly as claimed in Claim 128, wherein said flywheel body comprises an inner portion defining a circular central hole, and an outer portion surrounding said inner portion of said flywheel body; said elastic plate comprises an outer portion which surrounds said inner portion of said elastic plate and which is fixed to said outer portion of said flywheel body; said reinforcing member is fit in said central hole of said flywheel body with a clearance to form a loose fit; and said reinforcing member comprises an outer circumferential surface for allowing said inner portion of said flywheel body to move axially to said elastic plate without limiting an axial movement of the inner portion of said flywheel body toward said elastic plate.

130. A flywheel assembly as set forth in Claim 129, wherein said reinforcing member extends axially from a first member end defined by a radially extending abutment surface held in contact with said elastic plate, to a second member end; said outer circumferential surface of said reinforcing member extends continuously from said abutment surface toward said second member end of said reinforcing member; said outer circumferential surface of said reinforcing member comprises an outer cylindrical surface section fit in said central hole of said flywheel body, and an outer curved surface section which extends continuously from said outer cylindrical surface section to said abutment surface; and said curved surface section is a surface of revolution whose diameter decreases from a diameter of said cylindrical surface section toward said abutment surface.

131. A flywheel assembly as set forth in Claim 130, wherein said flywheel body comprises a side surface facing toward said elastic plate, and said engaging surface

which faces away from said elastic plate and which extends in an imaginary flat plane; and said second member end of said reinforcing member is located axially between said engaging surface and said side surface of said flywheel body and away from said imaginary flat plane.

132. A flywheel assembly as set forth in Claim 128, wherein said flywheel body comprises an inner portion defining a circular central hole, and an outer portion surrounding said inner portion of said flywheel body; said elastic plate comprises an outer portion which surrounds said inner portion of said elastic plate and which is fixed to said outer portion of said flywheel body; and said reinforcing member comprises an outer circumferential surface allowing said inner portion of said flywheel body to move axially toward said elastic plate without limiting an axial movement of the inner portion of said flywheel body toward said elastic plate.

133. A flywheel assembly as set forth in Claim 128, wherein said flywheel body comprises a side surface facing toward said elastic plate, and said engaging surface which faces away from said elastic plate; and said reinforcing member comprises a radially extending abutment surface held in contact with said elastic plate, and an outer circumferential curved surface which extends continuously from said abutment surface to a curved surface end which is located axially between said side surface of said flywheel body and said engaging surface of said flywheel body.

134. A flywheel assembly as set forth in Claim 133, wherein said outer circumferential curved surface of said reinforcing member is a surface of revolution whose

diameter increases from said abutment surface of said reinforcing member to said curved surface end of said outer circumferential curved surface.

135. A flywheel assembly as set forth in Claim 133, wherein said reinforcing member extends axially from a first member end defined by said abutment surface to a second member end which is located axially between said engaging surface and said side surface of said flywheel body; and an axial distance of said second member end of said reinforcing member from said abutment surface of said reinforcing member is smaller than an axial distance of said engagement surface of said flywheel body from said abutment surface of said reinforcing member.

136. A flywheel assembly as set forth in Claim 133, wherein said engaging surface of said flywheel body extends in an imaginary flat plane; and said reinforcing member extends axially from a first member end defined by said abutment surface to a second member end which is located axially between said engaging surface and said side surface of said flywheel body and which is away from said imaginary flat plane.

137. A flywheel assembly as set forth in Claim 136, wherein said flywheel body comprises an inner portion defining a circular central hole, and an outer portion surrounding said inner portion of said flywheel body; said elastic plate comprises an outer portion which surrounds said inner portion of said elastic plate and which is fixed to said outer portion of said flywheel body; said reinforcing member comprises a received portion which is received in said central hole of said flywheel body; and said outer curved surface of

said reinforcing member extends continuously from said abutment surface to said received portion.

138. A flywheel assembly as set forth in Claim 137, wherein said received portion of said reinforcing member comprises a cylindrical outside surface received in said central hole of said flywheel body, and the diameter of said curved surface increases continuously from said abutment surface to a diameter of said cylindrical surface of said reinforcing member.

139. A flywheel assembly as set forth in Claim 136, wherein said engaging surface of said flywheel body is formed so as to make the axial run-out no more than 0.1 mm by processing said engaging surface of said flywheel body in an assembled state in which said crankshaft, said elastic plate, said flywheel body and said reinforcing member are assembled in a unit.

140. A flywheel assembly according to claim 113, wherein said first portions of said flywheel body and said elastic plate define a space consisting essentially of said first clearance.

141. A flywheel assembly according to claim 113, wherein said first portion of said flywheel body slidably contacts an axial surface of said radially extending portion of said reinforcing member.

142. A flywheel assembly according to claim 113, wherein said flywheel body axially moves corresponding to said axial rigidity of said elastic plate in the range of 600 kg/mm to 2200 kg/mm without contact on its radial surfaces when said flywheel is engaged and disengaged.

143. A flywheel assembly according to claim 128, wherein said first portions of said flywheel body and said elastic plate define a space consisting essentially of said first clearance.

144. A flywheel assembly according to claim 128, wherein said first portion of said flywheel body slidably contacts an axial surface of said radially extending portion of said reinforcing member.

145. A flywheel assembly according to claim 128, wherein said elastic plate has an axial rigidity in the range of 600 kg/mm to 2200 kg/mm so as to ensure transmission of engine torque through said flywheel assembly, while decreasing noise produced by a bending vibration of said crankshaft; and wherein said flywheel body axially moves corresponding to said axial rigidity of said elastic plate in the range of 600 kg/mm to 2200 kg/mm without contact on its radial surfaces when said flywheel is engaged and disengaged.

146. A flywheel assembly as set forth in claim 113, wherein said axial rigidity is in the range of 600 kg/mm to 1700 kg/mm.

147. A flywheel assembly as set forth in claim 146, wherein an axial run-out of said engaging surface when rotated by said crankshaft is no more than 0.1 mm.

148. A flywheel assembly according to claim 113, wherein said elastic plate is clamped axially between said reinforcing member and said shaft end of said crankshaft by a fastening means.

149. A flywheel assembly according to claim 113, wherein said elastic plate is circular and comprises an outer peripheral portion (2b) surrounding said first portion of said elastic plate, so that said first portion of said elastic plate is an inner portion of said elastic plate, said flywheel body comprises an outer peripheral portion (5a) which surrounds said first portion of said flywheel body, so that said first portion of said flywheel body is an inner portion of said flywheel body, said outer peripheral portions of said elastic plate and said flywheel body are fastened together by a second fastening means (6), said inner portion of said flywheel body comprises an inwardly facing inside cylindrical surface defining a central circular hole (5b), said reinforcing member comprises a cylindrical portion (4a) which is received in said circular hole (5b) of said flywheel body, and comprises an outwardly facing outside cylindrical surface surrounded by said inwardly facing cylindrical surface of said flywheel body.

150. A flywheel assembly according to claim 149, wherein said inner portion of said flywheel body comprises a first surface (5f) which is parallel to said engaging surface (5g) and which faces toward said elastic plate, and a second surface (5d) which is

parallel to said engaging surface, said inner portion of said elastic plate comprising an abutting surface confronting said first surface of said flywheel body and limiting an axial movement of said inner portion of said flywheel body by abutting against said first surface of said flywheel body.

151. A flywheel assembly according to claim 150, wherein said second surface (5d) of said inner portion of said flywheel body is located axially between said first surface (5f) and said engaging surface (5g) of said flywheel body.

152. A flywheel assembly as set forth in claim 113, wherein:

said elastic plate is a circular elastic plate (2) which further comprises an outer portion, and said inner portion extends radially inwardly from said outer portion to said inner portion;

said fly wheel body is an annular flywheel body (5) which comprises an outer portion and an inner portion and extending radially inwardly from said outer portion to said inner portion of said flywheel body, said outer portion of said flywheel body being fastened to said outer portion of said elastic plate, said inner portion of said flywheel body comprising a central circular hole; and

said reinforcing member further comprises a cylindrical portion (4a) axially extending from a first member end to a second member end, an inner portion extending radially inwardly from said first member end of said cylindrical portion, and an outward flange (4b) extending radially outwardly from said second member end of said cylindrical portion, said inner portion of said reinforcing member being fastened to said shaft

end of said crankshaft, said cylindrical portion of said reinforcing member being fit in said circular hole of said flywheel body with a clearance to form a loose fit;

wherein said inner portion of said elastic plate is fixedly clamped between said shaft end of said crankshaft and said inner portion of said reinforcing member, said inner portion of said flywheel body is fit over said cylindrical portion of said reinforcing member.

153. A flywheel assembly according to claim 152, wherein a wall thickness of said inner portion of said reinforcing member is greater than a wall thickness of each of said outward flange of said reinforcing member and said inner portion of said elastic plate, said wall thickness of each of said inner portion and said outward flange of said reinforcing member and said inner portion of said elastic plate being a dimension measured in an axial direction parallel to an axis of said crankshaft.

154. A flywheel assembly according to claim 152, further comprising a first fastening means for fastening said outer portions of said elastic plate and said flywheel body together, and a second fastening means for fastening said inner portions of said elastic plate and said reinforcing member to said shaft end of said crankshaft, each of said first and second fastening means comprises screw fasteners extending axially along an axis of said crankshaft.

155. A flywheel assembly as set forth in claim 128, wherein said elastic plate has an axial rigidity in the range of 600 kg/mm to 2200 kg/mm so as to ensure

transmission of engine torque through said flywheel assembly, while decreasing noise produced by a bending vibration of said crankshaft.

156. A flywheel assembly according to claim 155, wherein said elastic plate is clamped axially between said reinforcing member and said shaft end of said crankshaft by a fastening means.

157. A flywheel assembly according to claim 128, wherein said elastic plate is circular and comprises an outer peripheral portion (2b) surrounding said first portion of said elastic plate, so that said first portion of said elastic plate is an inner portion of said elastic plate, said flywheel body comprises an outer peripheral portion (5a) which surrounds said first portion of said flywheel body, so that said first portion of said flywheel body is an inner portion of said flywheel body, said outer peripheral portions of said elastic plate and said flywheel body are fastened together by a second fastening means (6), said inner portion of said flywheel body comprises an inwardly facing inside cylindrical surface defining a central circular hole (5b), said reinforcing member comprises a cylindrical portion (4a) which is received in said circular hole (5b) of said flywheel body, and comprises an outwardly facing outside cylindrical surface surrounded by said inwardly facing cylindrical surface of said flywheel body.

158. A flywheel assembly according to claim 157, wherein said inner portion of said flywheel body comprises a first surface (5f) which is parallel to said engaging surface (5g) and which faces toward said elastic plate, and a second surface (5d) which is

parallel to said engaging surface, said inner portion of said elastic plate comprising an abutting surface confronting said first surface of said flywheel body and limiting an axial movement of said inner portion of said flywheel body by abutting against said first surface of said flywheel body.

159. A flywheel assembly according to claim 158, wherein said second surface (5d) of said inner portion of said flywheel body is located axially between said first surface (5f) and said engaging surface (5g) of said flywheel body.

160. A flywheel assembly as set forth in claim 128, wherein:

said elastic plate is a circular elastic plate (2) which further comprises an outer portion, and said inner portion extends radially inwardly from said outer portion to said inner portion;

said fly wheel body is an annular flywheel body (5) which comprises an outer portion and an inner portion and extending radially inwardly from said outer portion to said inner portion of said flywheel body, said outer portion of said flywheel body being fastened to said outer portion of said elastic plate, said inner portion of said flywheel body comprising a central circular hole; and

said reinforcing member further comprises a cylindrical portion (4a) axially extending from a first member end to a second member end, an inner portion extending radially inwardly from said first member end of said cylindrical portion, and an outward flange (4b) extending radially outwardly from said second member end of said cylindrical portion, said inner portion of said reinforcing member being fastened to said shaft

end of said crankshaft, said cylindrical portion of said reinforcing member being fit in said circular hole of said flywheel body with a clearance to form a loose fit;

wherein said inner portion of said elastic plate is fixedly clamped between said shaft end of said crankshaft and said inner portion of said reinforcing member, said inner portion of said flywheel body is fit over said cylindrical portion of said reinforcing member.

161. A flywheel assembly according to claim 155, wherein said elastic plate has an axial rigidity which is in the range of 600 kg/mm to 1700 kg/mm.

162. A flywheel assembly according to claim 160, wherein a wall thickness of said inner portion of said reinforcing member is greater than a wall thickness of each of said outward flange of said reinforcing member and said inner portion of said elastic plate, said wall thickness of each of said inner portion and said outward flange of said reinforcing member and said inner portion of said elastic plate being a dimension measured in an axial direction parallel to an axis of said crankshaft.

163. A flywheel assembly according to claim 160, further comprising a first fastening means for fastening said outer portions of said elastic plate and said flywheel body together, and a second fastening means for fastening said inner portions of said elastic plate and said reinforcing member to said shaft end of said crankshaft, each of said first and second fastening means comprises screw fasteners extending axially along an axis of said crankshaft.

164. A flywheel assembly according to claim 113, wherein said radially extending portion further comprises a radially extending section (4b) at least partially overlapping the first portion of said flywheel body in a radial direction.

165. A flywheel assembly according to claim 128, wherein said radially extending portion further comprises a radially extending section (4b) at least partially overlapping the first portion of said flywheel body in a radial direction.

Amendments to the Drawings:

The drawing sheets attached in connection with the above-identified application containing Figure(s) 1 and 3 are being presented as a new formal drawing sheets to be substituted for the previously submitted drawing sheet or sheets. The drawing Figures 1 and 3 have been amended as per annotated copy of the previous drawing sheets filed May 20, 1997 and July 22, 1997 which have been marked to show changes presented in the replacement sheets of the drawings.

The specific changes which have been made to Figure 1 are the addition of element numbers 2f, 4f, 5h, 5j, 5k, 10 and 11 in Figure 1 and the addition of element numbers 5j, 5k, 10 and 11 in Figure 3. These changes were previously presented on May 20, 1997 and July 22, 1997 and have been approved by the Examiner in the latest office action.